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Second Contribution to a History of the DELPHINIDÆ.

BY E. D. COPE.

Beluga rhinodon, sp. nov.

Dr. Isaac I. Hayes brought, from his last Arctic expedition, the skeletons of two evidently different species of White Whales. These, with another in the Academy's Museum, brought by Dr. E. K. Kane, I enumerated as specimens of the common *Beluga catodon*, in my "First Contribution to the History of the Delphinidæ," but subsequently, after a thorough study, I was compelled to believe they had belonged to as many species, and recorded them as such at a meeting of the Academy, (*vide* Proceedings, 1865, p. 274.) After a study of more extended material, I have come to the conclusion that the genus of White Whales, like that of *Corvus*, *Quiscalus*, etc., is represented by several species of similar color. This view is consistent with our knowledge of its distribution throughout all the Arctic seas, and the great numbers in which they occur on the coasts of all Arctic regions. At present I give briefly the diagnostic characters of four species, premising that I have not at present means of determining the full characters of two,—*Beluga vermontana*, Thompson, and *Beluga kingii*, Gray. The present species comes under section

- a. Cervical vertebræ distinct; no vertebral canal; dorsals and ribs ten; acromion recurved.

Muzzle short, to notch equal from notch to supraoccipital crest; exposed prenares part of maxillaries extending to opposite notch. Palatines barely in contact; vomer well developed behind them. No tubercular process on first rib. Teeth 4—6.

Beluga catodon, auctorum.

Muzzle to notch one-half of whole cranium; exposed portion of maxillaries half way to notch; palatines much in contact; vomer scarcely developed behind; first rib with an elongate tubercular process. Teeth "8—8 to 10—10."

- aa. Cervical vertebræ distinct, no vertebral canal; dorsals and ribs eleven; acromion decurved.

Beluga declivis, sp. nov.

Muzzle to notch half length of cranium; exposed portion of maxillaries half way to notch; palatines widely separated; vomer well developed behind them; first rib with an elongate tubercular process. Teeth 9—10.

- aaa. Axis and third vertebra ankylosed by centrum and diapophyses, latter perforate for vertebral artery; dorsals and ribs eleven; acromion recurved.

Beluga concreta, sp. nov.

Muzzle to notch half total length of cranium; exposed portion of maxillaries half way to notch; palatines largely in contact; vomer little developed behind them. No tubercular process on first rib. Teeth 6—7.

In the *declivis* and *concreta* the neural spine of the axis is steeply tectiform and keeled; in the *catodon* and *rhinodon* very flat. The diapophyses of the seventh cervical are longer and more recurved in the *rhinodon* than in the others.

The length of the skeleton of the *rhinodon* is 7 feet 10 $\frac{3}{4}$ inches; of the *concreta* 13 feet 2 $\frac{1}{2}$ inches. The former, and that of the *catodon*, are from Upernavik; those of the *concreta* and *declivis* were obtained by Dr. Kane; the last is in the Museum Comparative Zoology, Cambridge, Mass.

[Dec.

The White Whale of the St. Lawrence, *Delphinus canadensis* of Desmarest, figured roughly after Duhamel, by Gray, (Zool. Erebus and Tefror,) and recently described by Prof. Jeffries Wyman in the Proc. Bost. Society Nat. History, is distinct from the preceding species. In all of them there is a strong postero-inferior medial process of the atlas, not seen in Dr. Wyman's figures, and in none is the odontoid process prolonged or elevated; his figure represents a deeper (thicker) axis, and more elevated atlas than any of the preceding possess. The rudimental dorsal fin and auricular meatus do not exist in the true catodon, (syn. *B. albicans*.) carefully described by Barclay and Neill in the Wernerian Transactions, 1817, (the former represented by a ridge only;) nor do Pallas and others allude to a dorsal fin, as observed by Dr. Wyman. The complete vertebral canal of the third cervical vertebra is, perhaps, also a character. In a specimen ten feet in length, the seven cervicals measured seven inches, which is the length given for those of a catodon of fourteen feet.

The *Beluga canadensis* must be included in the fauna of the United States, though not included in the published New York or Massachusetts faunæ. Josselyn states, page 105 of "An account of two voyages to New England, (1673)," "The sea hare is as big as a grampus or herring-hog, and as white as a sheet. There hath been some of them at Black Point Harbour, Maine, and some way up the river, but we could never take any of them; several shot slugs at them, but lost their labour." Verrill, in his Catalogue of the Mammals, observed at Anticosti in the summer of 1861,* does not enumerate this species. He notes two species of Megaptera, which is probably the first record of the *Megaptera osphya*, (Proc. Acad., 1865, 178.)

Phocæna brachyum.

Two specimens (Nos. 105-6) from the Museum of the Essex Institute at Salem, Mass., which has lent me, through Fredk. W. Putnam, Director,† numerous specimens of Cetaceans, represent this species. It is found in the harbor of that port, and is called the "Puffing Pig."

As compared with the *P. communis*, the muzzle is less acuminate and elevated on the median line; the maxillaries are flatter, oblique, and not descending vertically to the alveolar border. The triangle is more elevated, and not flat, medially, and extends to beyond the posterior fourth of the dental series. The premaxillary knobs are strongly developed, and their posterior acumination does not extend behind the middle of the margin of the nareal opening. Nasals with a curved concavity and external prominence. The squamosal bone, occipital process, and sphenoid border are much plicated. The points of insertion of the muscles on the basioccipital bone are situate one opposite each condyle, instead of on a median longitudinal ridge. A very small triangular surface of the vomer reaches the palatine plane, giving its posterior border little of that W-shaped outline produced in the *P. communis* by the large development of the vomer. The pterygoids are broader than in the same species, nor prolonged so far posteriorly.

The distance from the coronoid process to the angle of the mandible enters $3\frac{2}{3}$ times into the length of the ramus; its middle is measured by the lower part of the condyle. The alveolar border is half the length of the ramus to the coronoid process.

The sella turcica is but little depressed, and the corpus olivare little elevated. The bony falx is well developed near the foramen magnum, but rapidly diminishes superiorly; no tentorium. There is a lateral fontanelle on the supraoccipital of one specimen, none on the other.

* Proc. Bost. Soc. N. II., 1862, 135.

† Not Secretary, as accidentally mentioned in my first "Contribution."

	106		105	
	Inch.	Line.	Inch.	Line.
Length from end muzzle to convexity of occipital condyle.....	11...	1-2.....	11...	4
Length from end muzzle to basal notch.....	4...	6	4...	7-6
“ “ “ nares.....	5...	7-2.....	5...	8
“ “ “ supraoccipital crest.....	8...	10-4.....	8...	10-8
“ of ramus mandibuli.....	8...	0	7...	9
Breadth at middle of alveolar border	1...	11-4.....	1...	9-2
“ notch.....	2...	9-6.....	2...	10
“ middle of orbits.....	5...	0-4.....	4...	7-8
“ temporal crests.....	5...	0-5.....	4...	10-5
“ of blow holes	1...	3	1...	2
“ premaxillary knobs.....	1...	6-8.....	1...	5-4
“ premaxillaries at middle muzzle	0...	10-5.....	0...	11
“ palatines anteriorly.....	1...	11	1...	9
“ angles of mandible.....	4...	8-6.....	4...	9
Length of upper tooth line.....	3...	6-3.....	3...	9-2
“ gony.....	1...	0	0...	9-8
Depth of ramus at middle tooth line.....	0...	8-4.....	0...	7-2
Teeth.....	25		24	
	24		21	

The os hyoides has somewhat the form of a caudal fluke. The anterior extremity is grooved below; the hæmal apophyses are broader than the body, convex exteriorly, thin on the edges, and tapering to a very small articular extremity. Length of body 1 inch 5·8 lines. Extent of apophyses 3 inches 8·6 lines.

Prof. Wyman states,* that in “the porpoise,” probably following Cuvier, the seven cervical vertebræ are ankylosed. Hunter states of the *Phocæna communis* that the four anterior only are united.

Hyperodon semijunctus, sp. nov.

The question as to whether a *Hyperodon* exists on this side the Atlantic, has at length been solved by the description which I have received through Dr. Alexander Wilcocks of this city, of a species taken in Charleston Harbor. This is well drawn up by Gabriel Manigault, who set up the specimen, which adorns the Charleston Museum. The points wherein it evidently differs from its congeners, the *H. bidens* and *latifrons*, are, first, the separation of the four posterior cervical vertebræ, the three anterior only being solidly ankylosed, instead of the seven, as in the known species, even in the young, according to Dr. J. E. Gray. Second, the possession of one or more pair of ribs added to the flying series, and of two more vertebræ, including ten dorsals instead of nine.† Five ribs are connected with the sternum, of which the anterior articulates with the seventh cervical by its inferior head.

I extract the following from Gabr. Manigault's description :

“The superior maxillary bones are quite pointed in front and widen out towards the base of the snout. Their lateral edges become developed on each side into a prominent vertical ridge, which is slightly convex on the outer surface, and the reverse on the inner. These bones, after having widened out upon approaching the orbits, ascend vertically along with the occipital (the two together holding the frontal, which is quite perceptible, between them,) and form at the back of the head a transverse ridge, which is quite high and very thick. From my not knowing by what name it was

* Journ. Bost. Soc. N. Hist., 1863, p. 669.

† Nine are given by Cuvier, *Ossemens Fossiles*, viii. 188; and Flower, *Proc. Zool. Soc., Lond.*, 1864, 419.

known, I did not satisfy myself concerning the presence of palatine tubercles. Another peculiarity of the head consists in the lower maxillary bones being provided each at its point with a single small and very sharp tooth. These were not noticed during the dissection, owing to their being too much imbedded in the integuments; they are now, however, quite visible. In the cavity of the skull is a septum of bone separating the cerebrum from the cerebellum, (*i. e.* the tentorium.) The first rib is very wide and short, and presents a marked contrast to the others. The sternum is quite flat and wide. The pectoral fins are small, and have been carefully preserved, with the various carpal and phalangeal bones kept together by their natural ligaments. As the skeleton stands, the fins consist only of the scapula, the humerus, the radius, and the ulna, with but few phalanges.

"The length of this specimen is between twelve and thirteen feet."

Delphinus erebennus, sp. nov.

This species has been noticed, Proc. Academy, 1865, p. 199, as the *D. tursio*, though sundry differences were there enumerated, and the possibility of its distinctness pointed out. The only specimen at that time in the Academy's possession was the skeleton of a young animal. Since then, the institution has been presented with a skeleton of a very old individual by Dr. Howell of this city, who obtained the animal some years since from a fisherman's seine at Red Bank, below opposite this city. Like a usual form of the *tursio*, the species is probably entirely black, but smaller, and possessed of several less ribs and dorsal vertebræ. The skeletons of the American species agree in the following formula: C. 7. D. 11. L. 16. C. 4 to 8 to last neural spine. The first perforated caudal is two vertebræ anterior in the older, to that of the younger specimen. The separate vertebræ resemble those figured by Cuvier (*Ossements Fossiles*) except the 12th caudal. It is doubtful, however, whether the latter represents the *tursio*, as the vertebral formula differs much from that recorded by Hunter, (*Philos. Trans.*, 1787, 383,) which must probably be regarded as the type, (*vide* Gray, *Cat. Brit. Mus.*,) as follows: C. 7. D. 18. L. and C. 37.

The acromion in the *erebennus* is short, and broadly truncate. In the small processes of the cervical vertebræ the two specimens differ much, the larger being much the more unlike the *tursio*. Their position is elevated opposite the middle of the centra, and two of them have a weak connection with the superior process, forming a vertebral canal. The diapophysis of the atlas is short. As in the *tursio*, this vertebra and the axis are ankylosed. The abbreviation of the sternum, apparent in the young specimen, is borne out by the adult. All the original segments are abbreviated, but especially the posterior, which is not more than one-third the length given in Cuvier's figure of the *tursio*; it is joined at much shorter distances by the same number of hæmapophyses—five. In this specimen it is singularly unsymmetrical; the animal exhibits numerous exostoses, and a synostosis of the body and processes of two of the lumbar vertebræ.

This species has been also mentioned by Prof. Wyman as the *tursio*.

The length of the specimen presented by Dr. Howell is seven feet and a half. The teeth are truncated as in the adult *tursio*.

The Annual Reports of the Recording Secretary and Curators were read, as follows:

1865.]